We claim:

1. A nucleic acid molecule encoding a protein with the function of a potato α-glucosidase, selected from the group consisting of
a) nucleic acid molecules which encode a protein which encompasses the amino acid sequence stated under Seq ID NO. 2 or its derivatives or parts,
b) nucleic acid molecules which encompass the nucleotide sequence shown under Seq ID No. 1 or its derivatives or parts, or a corresponding ribonucleotide sequence;
c) nucleic acid molecules which hybridize with, preferably which hybridize specifically with, or are complementary to, the nucleic acid molecules stated under a) or b), and
d) nucleic acid molecules whose nucleotide sequence deviates from the sequence of the nucleic acid molecules stated under a), b) or c) owing to the degeneracy of the genetic code.

2. A recombinant nucleic acid molecule containing
a) a nucleic acid molecule encoding a protein with the function of a potato α-glucosidase as claimed in claim 1 and
b) one or more nucleotide sequences which encode a protein selected from amongst group A, composed of proteins with the function of branching enzymes, ADP glucose pyrophosphorylases, granule-bound starch synthases, soluble starch synthases, debranching enzymes, disproportioning enzymes, plastid starch phosphorylases, R1-enzymes, amylases, glucosidases, parts of said nucleotide sequences, or nucleic acid molecules which hybridize with said nucleotide sequences.

3. A nucleic acid molecule as claimed in claim 1 or 2, which is a deoxyribonucleic acid molecule.

4. A nucleic acid molecule as claimed in claim 2, which is a cDNA molecule.

5. A nucleic acid molecule as claimed in claim 1, which is a ribonucleic acid molecule.

6. A nucleic acid molecule which hybridizes, preferably specifically hybridizes, with a nucleic acid molecule [lacuna] one or more of claims 1 to 5.

7. A vector comprising a nucleic acid molecule as claimed in one or more of claims 1 to 6.

8. A vector comprising a nucleic acid molecule as claimed in one or more of claims 1-6, wherein the nucleotide sequence encoding a protein with the function of a soluble starch synthase III or parts thereof is present in sense or antisense orientation.

9. A vector comprising a nucleic acid molecule as claimed in one or more of claims 1-6, wherein the nucleotide sequence encoding one or more proteins selected from group A or parts thereof is present in sense or antisense orientation.

10. A vector comprising a nucleic acid molecule as claimed in one or more of claims 1-6, wherein the nucleotide sequence encoding one or more proteins selected from group A is partly present in sense orientation and partly in antisense orientation.

11. A vector comprising a nucleic acid molecule as claimed in one or more of claims 1-6, which is linked to regulatory elements which ensure transcription and synthesis of an RNA, which is optionally translatable, in a pro- or eukaryotic cell.

12. A host cell which is transformed with a nucleic acid molecule as claimed in one or more of claims 1-6 or a vector as claimed in one or more of claims 7-11 or which is derived from such a cell.

13. A process for the generation of a transgenic plant cell which synthesizes a modified starch, wherein a nucleic acid molecule as claimed in one or more of claims 1-6 or a vector as claimed in claim 7-11 is integrated into the genome of a plant cell.

14. A plant cell which is obtainable by a process as claimed in claim 13.

15. A process for generating a transgenic plant which synthesizes a modified starch, wherein an intact plant is regenerated from a cell as claimed in claim 14.

16. A plant comprising a plant cell as claimed in claim 14.

17. A plant as claimed in claim 16, which is a useful plant.

18. A plant as claimed in one or more of claims 16 to 17, which is a starch-storing plant.

19. A plant as claimed in one or more of claims 16 to 18, which is a wheat, maize, potato or rice plant.

20. Propagation material of a plant as claimed in one or more of claims 16 to 19.

21. A process for the production of starch by a method known per se, wherein plant cells as claimed in claim 14, plants as claimed in one or more of claims 16 to 19 or propagation material as claimed in claim 20 are integrated into the process.

22. A starch obtainable from a cell as claimed in claim 12 or 14, a plant as claimed in one or more of claims 16 to 19, from propagation material as claimed in claim 20 or a process as claimed in claim 21.

23. The use of the starch as claimed in claim 22 in the industrial sector, preferably for the production of foodstuffs, packaging materials or disposable articles.

24. The use of nucleic acid molecules as claimed in one or more of claims 1-6 or vectors as claimed in one or more of claims 7-11 for the generation of transgenic cells, preferably bacterial or plant cells.

25. The use of plant cells as claimed in claim 14, plants as claimed in one or more of claims 16 to 19 or propagation material as claimed in claim 20 for the production of starch.

Add A1

Add B3

Add C1

Add D3